Patent claims

1. A flux for brazing, in particular for brazing metal components, in which nanoparticles are added to a base material.

2. The flux as claimed in claim 1, in which the proportion of nanoparticles added is between 0.01% by volume and 10% by volume, in particular between 0.1% by volume and 1% by volume.

3. The flux as claimed in claim 1 or 2, in which the nanoparticles used are nanoscale pigments and/or nanoaggregates dispersed in an organic polymer, known as nanopaints, comprising oxides, oxide hydrates, nitrides and/or carbides of aluminum, silicon, boron and/or transition metals, preferably from transition groups IV and V of the periodic system, and/or cerium and/or coated nanoparticles and/or grafted nanoparticles of the abovementioned substances or compounds and/or carbon nanoparticles.

4. The flux as claimed in claim 3, in which the proportion of organic polymer in the mixture after drying is between approximately 0.01% by volume and 10% by volume, in particular between 0.1% by volume and 1% by volume.

5. The flux as claimed in claim 3 or 4, in which the polymer used is polyurethanes, synthetic resins, phthalates, acrylates, vinyl resins, silicone resins and/or polyolefins.

6. The flux as claimed in one of the preceding claims, in which the base material used is potassium fluoroaluminates with the empirical formula $K_{1-3}AlF_{4-6}$ or potassium and/or cesium fluorostannates with the empirical formulae $KSnF_3$ and $CsSnF_3$.

7. A process for producing the flux as claimed in one of claims 1 to 6, in which nanoparticles are produced by dispersion methods or ultrafine wet milling and are added to a base material prior to the brazing process.

8. A process for producing the flux as claimed in one of claims 1 to 6, in which nanoparticles are firstly dispersed in an organic polymer and then added as a nanopaint to a base material prior to the brazing process.

9. A process for brazing metal components, in which the flux as claimed in one of claims 1 to 6 is used.

10. A process for brazing metal components, in which starting materials for nanoparticles are added to a base material prior to the brazing process and nanoparticles which are formed by a chemical reaction during the brazing process are deposited on the component surface.

11. The process as claimed in claim 10, in which the reaction takes place at a temperature in a range between 350°C and 660°C, in particular between 350°C and 600°C, and in a nitrogen atmosphere.

12. The process as claimed in claim 10 or 11, in which the starting materials for nanoparticles used are carbon and/or oxides, oxide hydrates, nitrides and/or carbides of aluminum, silicon, boron and/or transition metals, preferably from transition groups IV and V of the periodic system, and/or cerium.

13. The process as claimed in one of claims 10 to 12, in which the base material used is potassium fluoro-aluminates with the empirical formula $K_{1-3}AlF_{4-6}$ or

potassium and/or cesium fluorostannates with the empirical formulae $KSnF_3$ and $CsSnF_3$.

14. The use of the flux as claimed in one of claims 1 to 6 for producing nanocoated components, in particular heat exchangers, based on aluminum or aluminum alloys for the automotive industry.